thm_2Ecanonical_2Edatatype__spolynom (TMcXTZWNVCkpcuF82sM9HZ1Qhu7xibhSjuF)

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Let $ty\_2Ecanonical\_2Espolynom : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty\_2Ecanonical\_2Espolynom\ A0) \quad (1)$$

Let $c\_2Ecanonical\_2ESPmult : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Ecanonical\_2ESPmult\ A\_27a \in (((ty\_2Ecanonical\_2Espolynom\ A\_27a)^{(ty\_2Ecanonical\_2Espolynom\ A\_27a)})^{(ty\_2Ecanonical\_2Espolynom\ A\_27a)}) \quad (2)$$

Let $c\_2Ecanonical\_2ESPplus : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Ecanonical\_2ESPplus\ A\_27a \in (((ty\_2Ecanonical\_2Espolynom\ A\_27a)^{(ty\_2Ecanonical\_2Espolynom\ A\_27a)})^{(ty\_2Ecanonical\_2Espolynom\ A\_27a)}) \quad (3)$$

Let $c\_2Ecanonical\_2ESPconst : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Ecanonical\_2ESPconst\ A\_27a \in ((ty\_2Ecanonical\_2Espolynom\ A\_27a)^{A\_27a}) \quad (4)$$

Let $ty\_2Equote\_2Eindex : \iota$ be given. Assume the following.

$$nonempty\ ty\_2Equote\_2Eindex \quad (5)$$

Let $c\_2Ecanonical\_2ESPvar : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Ecanonical\_2ESPvar\ A\_27a \in ((ty\_2Ecanonical\_2Espolynom\ A\_27a)^{ty\_2Equote\_2Eindex}) \quad (6)$$

Definition 1 *We define* c_2Emin_2E_3D *to be* $\lambda A.\lambda x \in A.\lambda y \in A.inj\_\_o\ (x = y)$ *of type* $\iota \Rightarrow \iota$.

Definition 2 *We define* c_2Ebool_2ET *to be* $(ap\ (ap\ (\text{c\_2Emin\_2E\_3D}\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V1$

Definition 3 *We define* c_2Ebool_2EDATATYPE *to be* $\lambda A\_27a : \iota.(\lambda V0x \in A\_27a.\text{c\_2Ebool\_2ET})$.

Definition 4 *We define* c_2Ebool_2E_21 *to be* $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap\ (ap\ (\text{c\_2Emin\_2E\_3D}\ (2^{A\_27$

Assume the following.

$$True \tag{7}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.((p\ (ap\ (\mathsf{c\_2Ebool\_2EDATATYPE}\ A\_27a)\ V0x)) \Leftrightarrow True)) \tag{8}$$

Theorem 1

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0spolynom \in ((((2^{(((ty\_2Ecanonical\_2Espolynom\ A\_27a)^{(ty\_2Ecanonical\_2Espolynom}$$